Assessing and Documenting Known Benefits of Kinnex

a. *Benefits to Socket Comfort*

Benefits of a microprocessor controlled prosthetic ankle can be documented by administering a Socket Comfort Score (SCS).

b. *Benefits on Uneven Terrain Ambulation*

The benefits a microprocessor controlled ankle provides when walking on uneven terrain can be documented by administering a patient reported outcome measure which include this environmental barrier as one of the survey items. Several examples include Prosthetic Limb User Survey of Mobility (PLUS-M), Locomotor Capabilities Index (LCI), and Houghton Scale.

c. *Benefits in Sit to Stand*

The benefits provided by a microprocessor controlled prosthetic ankle can be observed with 2D motion analysis and measuring the minimum ankle and knee joint angles. A prosthetic ankle angle which is smaller than 90° - a relative dorsiflexion ankle - demonstrates this benefit when arising from a chair.

d. *Benefits on Ramp Ambulation*

Benefits of a microprocessor controlled prosthetic ankle for ramp ambulation can be assessed in various ways. A patient reported outcome measure which includes items related to slopes and ramps can quantify the patient's self-reported mobility on these environmental barriers. Examples of such instruments include Prosthetic Limb User Survey of Mobility (PLUS-M), Prosthesis Evaluation Questionnaire Mobility Subscale (PEQ-MS), and Locomotor Capabilities Index (LCI), Houghton Scale. Benefits related to decreased socket pressure and discomfort can be verified by administering the Socket Comfort Score (SCS). If videotaping the patient ambulating on a slope from the sagittal plane is possible, 2D video motion analysis can verify the benefit provided by a microprocessor controlled prosthetic ankle during ramp ascent and descent. Walking down a slope, a microprocessor controlled prosthetic ankle will allow foot flat earlier in stance phase before the sound side limb progresses forward even with the prosthesis. The ankle angle at foot flat and mid-stance will be larger than with a fixed ankle prosthesis. At mid-stance, the residual knee will be at a more extended position.

e. *Benefits on Stair Ambulation*

The benefits provided to persons with lower limb amputation by a microprocessor controlled prosthetic ankle can be verified with 2D motion analysis by videotaping the person ambulating on stairs from the sagittal plane and measuring the minimum ankle and knee joint angles. A prosthetic ankle angle which is smaller than 90°, or a relative dorsiflexion ankle, demonstrates this benefit on stair ascent and descent. Additionally, the Stair Assessment Index (SAI) can be used to rate stair navigation. Several patients reported outcome measures can be administered to document the benefit if they include stairs as an item in the survey, such as the Prosthetic Limb User Survey of Mobility (PLUS-M), Prosthesis Evaluation Questionnaire Mobility Subscale (PEQ-MS), Locomotor Capabilities Index (LCI), and Houghton Scale.